A case study of the impact of cultural differences during a construction project in Ghana

A CASE STUDY OF THE IMPACT OF CULTURAL DIFFERENCES DURING A CONSTRUCTION PROJECT IN GHANA

Furber, A.[1], Smith, S.D and Crapper, M.

The University of Edinburgh, Edinburgh, UK

The lack of native engineers in developing countries means that often foreign engineers have a role to play in implementing the water and sanitation systems for rural communities as needed to meet the Millennium Development Goals targets for access to clean water and sanitation facilities. However, cultural differences between foreign engineers and local communities can lead to ineffective project management where these differences are not identified and managed successfully. A case study of a water and sanitation project undertaken in the Eastern Region of Ghana, with a British engineer and project manager, is used as the basis for exploration of some of the issues that arise when engineers work cross-culturally on this type of project. Hofstede's cultural dimensions are used as a conceptual paradigm through which to understand the behaviours and actions observed during the case study. The aim is to identify possible explanations for why cultural tensions arose during the project as a step towards understanding how these tensions might be reduced or eliminated in future projects in similar cultural contexts. It is found that cultural differences between engineer and community at the case study project led to issues with communication and implications for the effectiveness of different management structures. Findings may have broad relevance and help other engineers avoid some of the pitfalls of working in a cross-cultural context.

Keywords: culture, developing countries, Ghana, Hofstede.

INTRODUCTION

On average there are only five engineers and scientists for every ten thousand people in developing countries; in some African countries there is less than one. This compares to between twenty and fifty engineers and scientists per ten thousand people in developed countries (UNESCO, 2010). If water and sanitation facility access is to reach everyone in Sub-Saharan Africa it is estimated that two and a half million new engineers would be required in the region (ibid). The lack of local engineers means that support from foreign engineers is needed to improve access to this vital infrastructure.

[1] A.Furber@ed.ac.uk

Furber, A; Smith, S.D and Crapper, M (2012) A case study of the impact of cultural differences during a construction project in Ghana *In*: Smith, S.D (Ed) *Procs 28th Annual ARCOM Conference*, 3-5 September 2012, Edinburgh, UK, Association of Researchers in Construction Management, 553-562.

Engineers from developed countries need to be able to cross cultural boundaries effectively in order to work successfully in developing countries. Other authors have demonstrated that working successfully in a cross-cultural context is not a trivial undertaking. Hall and Jagger (1998) interviewed British construction professionals working internationally and found awareness of cultural differences to be quite high. 60% said that working internationally was more problematic than undertaking domestic work with most citing culture as the root cause of many of the issues.

Enshassi and Burgess (1991) found that construction managers working in cross-cultural contexts needed to have a strong awareness of cultural differences and be able to adapt their managerial style in order to work effectively when managing a multi-cultural work force. Rabbat and Harris (1982) studied international construction firms operating in the Middle East and raised the issue of the need for managers to adapt to the local culture in order to reduce conflict and lessen the implications of conflict on project outcomes. English (2001) documented the way that different cultural perspectives can lead to difficulties with effective communication whilst studying cross-cultural communication of construction workers in South Africa.

Even within regions cultural differences can cause issues for project management. Low and Shi (2001) looked at Singaporean firms working in China and found that, "Mismanaging cultural differences can render otherwise successful managers and organizations ineffective and frustrated when working across cultures".

The aim of this research is to contribute to understanding of the ways in which cultural differences impact on the work of engineers in cross-cultural contexts as a step towards understanding how projects – specifically small-scale rural projects – may be better managed to lessen the impact of cultural issues on project implementation. In order to do this a case study of a small water and sanitation project in the village of Emem in Ghana, in which one of the authors acted as engineer and project manager, is used as the basis of discussion. Hofstede's (2010) cultural dimensions are used as a framework to offer insight into the issues that arose due to cultural differences during the case study.

A brief overview of the conceptual paradigms which can be used to aid exploration of culture is first presented, and then the case study project at Emem, Ghana is introduced. Following this, the project management issues experienced during the case study are examined through the lens of Hofstede's dimensions of culture. The consequence of the main finding, that cultural differences impacted on the work of the engineer by creating issues related to communication, participation and management structure, will be discussed specifically for the project under study, and also in a broader and more generic context.

METHODOLOGICAL APPROACH

Fieldwork was undertaken over an initial period of seven months in 2010 and a later period of two months in 2011. During this time author Furber lived and worked in the Eastern Region of Ghana and was involved in rural water and sanitation projects, one of which forms the case study for this paper. During the 2010 phase of fieldwork, after several project management issues were encountered, it became clear that culture would form an important factor for consideration.

The concept of culture is notoriously difficult to define (see Kroeber and Kluckhohn, 1952 for an extensive list of definitions). For this research a definition and conceptual paradigm of culture has been selected for the practical purpose of providing a

framework to inform understanding of the issues that were encountered during fieldwork. Ogbor (1990) classed approaches to studying the implications of culture into three categories, approaches concerned with looking at the patterns of meaning (Geertz, 1973), cultural paradigms (Schein, 1985), and cultural dimensions (Hofstede, 1980, 1991, 2010).

The most influential model of culture is probably Hofstede's six dimension model. Hofstede defines culture as, "the collective programming of the mind that distinguishes the members of one human group from those of another. Culture in this sense is a system of collectively held values" (Hodstede, 1981). Hofstede's model has been selected for the pragmatic reason that it offers theoretical insights into the difficulties experienced during the fieldwork. Other frameworks could have equally been applied; this is discussed further in the 'Alternative Analysis' section below.

Hofstede statistically analysed over 100,000 questionnaires which measured the values of employees at IBM in over 50 countries. In the original version of his model four independent dimensions were identified that could be used to characterise cultures on a national scale (Hofstede, 1980). The fifth and sixth dimensions were added later in 1991 and 2010 respectively (Hofstede, 1991 and 2010). Hofstede himself notes that the cultural dimensions do not exist per se; they are in fact useful constructs. “A construct is a product of our imagination, supposed to help our understanding. Constructs do not “exist” in an absolute sense: We define them into existence” (Hofstede, 1980: Ch.1, p14). Hofstede has been criticised for making generalisations about cultures but his work is unarguably useful for predicting how a group of people from a given culture may react in a given scenario.

Hofstede's original four dimensions will be considered here:

- Power Distance Index - "the extent to which the less powerful members of institutions and organizations within a country expect and accept that power is unequally distributed" (Hofstede, 2010 p61);
- Individualism versus Collectivism - "individualism pertains to societies in which the ties between individuals are loose: everyone is expected to look after him- or herself and his or her immediate family. Collectivism as its opposite pertains to societies in which people from birth onward are integrated into strong, cohesive in-groups, which throughout people's lifetime continue to protect them in exchange for unquestioning loyalty" (ibid p92);
- Masculinity versus Femininity - "a society is called masculine when emotional gender roles are clearly distinct: men are supposed to be assertive, tough, and focused on material success, whereas women are supposed to be more modest, tender, and concerned with the quality of life. A society is called feminine when emotional gender roles overlap: both men and women are supposed to be modest, tender, and concerned with the quality of life" (ibid p140); and
- Uncertainty Avoidance Index - "the extent to which members of a culture feel threatened by ambiguous or unknown situations" (ibid p191).

Table 1: Hofstede's Cultural Dimension Scores for West Africa and Great Britain

		West Africa	Great Britain
Power Distance Index	PDI	77	35
Individualism v Collectivism	IND	20	89
Masculinity versus Femininity	MAS	46	66
Uncertainty Avoidance Index	UAI	54	35

As can be seen by Table 1, Ghana (as part of West Africa which includes Ghana, Nigeria and Sierra Leone in Hofstede's rating) has a culture which has much greater power distance that Great Britain, is much more collectively orientated, more feminine and more uncertainty adverse.

Many authors have found Hofstede's cultural dimensions to be a useful tool to explore the implications of culture (within construction management see for example, Low and Shi, 2001). Hofstede's dimensions have been used here to see if any further insights or explanations can be found regarding events that happened during the fieldwork. A case study of one particular project, at a village called Emem, has been selected for further inquiry.

The next section describes the case study project; following this a few examples of the cultural issues that were encountered during the project at Emem are given. Consideration is then given to the insights that can be gleaned by deliberating these issues framed by Hofstede's theory of culture. Discussion then turns to the broader implications of these insights for engineers.

Case study: Emem, Ghana

Emem is a small rural community of approximately two hundred people situated in the Eastern Region of Ghana beside Lake Volta. The community is of predominantly Ewe lineage, run by a chief with the help of seven elder men. The majority of the men in the village work as farmers and fishermen, whilst the women are farmers and traders. Prior to the water and sanitation project the community collected water for all purposes, including drinking, from the Lake. There were a couple of simple pit latrines in the village but these were privately owned by families and the majority of the people living in the village had no access to a toilet.

The project was intended to be a water and sanitation project, to help the community gain access to clean drinking water and hygienic sanitation facilities. At this time a water system has been constructed but work on the toilets was delayed due to construction management issues, which are discussed below. The construction was undertaken by members of the community, with the help of a few paid labourers where skilled labour was required. Author Furber was the engineer and project manager, working under the auspices of 'Original Volunteers Ghana' for the duration of the project. During 2011 she spent two months living at the village, having built a close relationship with the community.

Data collection

Of the two hundred people living in the village of Emem (including children) around thirty five adults were regularly involved in the construction project, either by participating in construction work or by contributing opinions to the design of the systems. Those who contributed ideas but did not participate in construction tended to be the more elderly members of the village who were no longer able to work.

Throughout the project author Furber kept a reflexive diary of the events as they were occurring, including notes on events including all members of the community but particularly focusing on those members who were regularly involved in the project. The issues described in the following section are based on data from this source.

ISSUES EXPERIENCED DURING THE PROJECT AT EMEM

A number of misunderstandings between engineer and community occurred during the project at Emem, which caused great frustration and confusion. Pseudonyms are used in the examples below, which describe some of the issues encountered.

Example 1: "Whatever you think"
The engineer approached the project with the opinion that she was working on behalf of the community who ought to lead the development process in their own community. The community, according to the engineer's preconceptions, should bring their opinions about a wide range of topics including the water and sanitation system design, the project process and any other aspects about which the community had a view. There was a noticeable reticence, however, on the part of most of the community to voice their opinions. Throughout the project, "Whatever you think" was a response heard time and time again to the engineer's questions. The chief and elders on the other hand had no such inhibitions and were very happy to voice their opinions. The engineer could not understand why the ordinary members of the community did not want to be more involved in the project.

Example 2: "My mother has already spoken"
During the project it was observed that when individuals did give opinions they did not want to disagree with the opinions that others had given. During an informal conversation with two women about what meetings needed to be scheduled the elder woman, Amma, was predominantly speaking and presenting what the author presumed to be her own opinion that it would be better to have a few family meetings rather than one big village meeting. The engineer then asked the younger women, Yaa, for her opinions, assuming that Yaa would have her own, possibly different, opinion. Yaa looked confused and said, "My mother has already spoken". It appeared strange from the engineer's perspective that Yaa would not give her opinion, even though it may be beneficial to the project.

Example 3: For the greater good
In another case the engineer was specifically looking for a personal opinion from a woman called Adzoa, who had trouble walking. She was the only lady in the village who had this particular issue and her input into the design of the water and sanitation systems to make it easier for her to collect water or use the latrines was sought. Adzoa's opinion, however, was not forthcoming as she did not feel that her own wellbeing was important when the majority of the group did not have her problem. In a group meeting with several women to discuss how the water collection point should be designed, another woman suggested making the approach as flat as possible to help Adzoa collect her water a little bit more easily. When the rest of the community cared about the Adzoa's wellbeing, it seemed odd that she would not contribute her opinion regarding how to design the systems to allow her ease of access.

Example 4: When the Chief's away…
Initially during the project at Emem it seemed easy to organise the work schedule and progress was good. Many of the members of the community were helping on the project, even on days that were not designated communal labour days. However,

towards the end of the project the chief lost interest in the project temporarily. His mother had died and his attention was turned towards planning her funeral and he had acquired a girlfriend in a neighbouring village and seemed more interested in visiting her than attending to his village duties. Of course there was a period of time following the funeral where work had to stop to allow the village to mourn the loss of a well respected elder, but when members of the village started to return to work it was considered an appropriate time to continue work on the project.

At this point the engineer had a limited time period remaining on the project and pressure was mounting to complete the project. There were clearly defined jobs that needed to be done and the engineer set about negotiating with individuals about who would do what to get the project completed. But at this late stage in the project the community appeared complacent to organise themselves to work. The engineer could not understand the lethargy apparent in the community; it seemed as though everyone had given up on the project and work was rapidly falling behind schedule.

DISCUSSION

To the foreign engineer these issues seemed perplexing. Why was the community so reticent to give their opinions? Why can two individuals not have their own different perspectives or speak up for their own needs? Why would the whole community put down their tools as soon as the chief turns his back on the project? The following paragraphs explore whether the use of Hofstede's cultural dimensions can elucidate any understanding of these events.

Explanations Based on Hofstede's Cultural Dimensions

Power Distance Index

The community belong to a culture which scores high on Hofstede's power distance index. According to Hofstede, subordinates in cultures with high power distance scores are accustomed to being told what to do and are less familiar with the more democratic ways of working that are commonplace in cultures with smaller power distances (Hofstede, 2010 pp73-74). Conversely the engineer belongs to a culture with a low power distance index and is used to flatter structures of power where subordinates and authority work together on more equal terms and subordinates expect to be consulted. Perhaps this explains the reticence of the community to give their opinions about particular topics and leads them to respond, "Whatever you think", as described in example 1. It is not a sign of disinterest in the project but rather the community do not feel it is their role to provide opinions.

Individualism versus Collectivism

The community also belong to a culture which is much more collectively orientated that the engineer's individualist culture. Collectivist cultures tend to present the opinions of their group rather than their own personal opinion, with the word 'I' used much less than in individualist cultures (ibid pp112-117). It is likely that Amma in example 2 was presenting the opinion of the group to the engineer. Therefore, when the Yaa was asked for her opinion this appeared a strange request from her cultural perspective. Amma had given the group opinion and therefore there was no need for her to reiterate it, her mother had already spoken.

It is possible that similar reasons led to Adzoa in example 3 being reticent to share opinions about her own well being. As the majority of the group did not have her problem she perhaps did not feel that it was for the benefit of the group to design the systems with her individual problems in mind. The group however, were happy to

look out for the all their members and so brought up the issue of ease of access on behalf of Adzoa.

Power Distance Index and Uncertainty Avoidance Index
Hofstede identifies four classifications in the way that different cultures structure their organisations. These classifications are based on the cultural dimensions of power distance index and uncertainty avoidance index (ibid p303). The community, coming from a culture with a high power distance index and a low uncertainty avoidance index would tend to organise themselves naturally into a structure that operates a bit like an 'extended family'. In the community at Emem the 'grandfather' of the family is the chief, he is the central authority and his role is to listen to the rest of the family but the responsibility falls to him to decide on the best course of action to take.

The engineer, by contrast, comes from a culture with low power distance and low uncertainty avoidance which tends towards structures that work like a village market. In the village market model members of the organisation are required to negotiate with others in the organisation to come to an agreed course of action. In example 4 the engineer assumed that it would be possible to negotiate with members of the community in order to complete the project without the presence of the chief and was therefore confused by the inaction of members of the community, thinking their lack of action represented disinterest in the project.

The use of Hofstede's framework provides an alternative explanation for the community's inaction, however. As the community operate like an 'extended family', a family in which the engineer does not belong, the engineer has no authority to ask people in the village to do any work. Work can not be negotiated like in the 'village market'.

Implications for Engineers

Considering the above examples of the cultural misunderstandings that occurred at Emem through the lens of Hofstede's cultural dimensions suggests implications for engineers working on community based projects in developing countries. This section looks at the implications that were apparent at Emem; the following section looks at the extent to which findings may be relevant for other projects in other locations.

Communication and participation
Research corroborates the findings of English (2002) as it was found that cultural differences impacted upon the ability of the engineer to communicate effectively with the community. The collectivist culture meant that individuals were reluctant to present opinions which were not representative of the whole group even where they may have been useful to the engineer. In addition, the power distance between the elders and ordinary members of the community meant that many members of the community did not feel it was their place to contribute opinions to the project.

As previously established by Reed and Smout (2005) gaining the opinions of a wide range of different groups within a community is vital to project success, to ensure it meets the needs of everyone including harder to reach groups such as the poorest and the disabled. Notably, the chief and elders who provided the majority of opinions were male and older. Water collection is often carried out by the women and younger members of the community. As far as sanitation is concerned, younger members of the community and women have different problems to face from the older men. This led to the risk that the project would not meet the needs of everyone in the village. The

chief and elders, while having the best intentions for the project, may not have full understanding of the issues faced by the women and children.

Participation requires redistribution of power to allow the less powerful members of a community more control over their own development. Hofstede notes the paradox of participation in cultures which score high for power distance index. This has serious implications for foreign engineers who are reliant on the participation of a range of groups from a community to ensure their designs meet the needs of all including the women, children, disabled and poorest individuals.

Management Structure

At the case study project the management structure applied by the engineer, based on assumptions about how organisations should work which originated in the engineers cultural background, proved ineffective. It was not possible to negotiate directly with members of the community in order to organise work; all work had to be organised through a leader of the community. When the chief was away it would perhaps been more effective to turn to the next most senior member of the community and ask him to organise the community to work on the project, rather than speaking directly to the community.

Like Low and Shi (2001) it was found that a lack of understanding of the local culture led to an inability to motivate individuals to work. Findings also support Enshassi and Burgess (1991) and Rabbat and Harris (1982) as misunderstanding the local cultural context was found to impact on the ability of the project manager to manage the local workforce effectively. Understanding the local culture better would have made selecting an appropriate management structure possible.

Relevance for Other Projects

The advantage of using a case study as the basis for research is the detail and depth of understanding that can be achieved about a particular project in a particular context. The disadvantage is that it is difficult to assess the relevance of findings for other projects conducted in other contexts.

Using Hofstede's cultural dimensions to explain cultural misunderstandings has the advantage that it suggests boundaries within which findings may be applicable, however. At Emem it is thought that commitment from the chief was an important factor for project success due to the organisation of the community as an 'extended family'. Therefore where other communities operate as an 'extended family' commitment of their chief (or alternative 'grandfather' figure) is likely to be equally crucial.

Likewise, it can be argued that issues around communication and participation may be experienced in other contexts where communities have a high power distance index or a collectivist culture. In these circumstances the engineer is likely to have to think carefully about how the opinions of different groups within the community can be reached to input their ideas into the design of systems.

Alternative Analysis

It is possible that there are other ways to analyse the events that occurred at Emem; it is not suggested that this interpretation is the only viable one. However, it is useful to see that there are different explanations of actions when viewed through an alternative lens. For example, using Hofstede's dimensions suggested that there may be an alternative explanation for the difficulties encountered with getting the community

motivated to work once the chief left the village, other than the engineer's initial perception that the community had lost interest in the project. This is useful for increasing understanding and tolerance between cultures, and would have significantly reduced the engineer's frustration had she been familiar with the work of Hofstede prior to the project.

Whilst much of the work of Hofstede rings true when considered in the light of the project at Emem, some observations were harder to corroborate with his theory. West Africa is in theory more feminine that Great Britain, yet the segregation of roles between men and women appeared more distinct. As discussed above, recognising the differing roles within a community is important for engineers so that they design effectively for all groups within the community. Whilst understanding the dynamic between women and men in the community was important for the water and sanitation project at Emem, the impact was unexpected in consideration of the masculinity scores assigned by Hofstede for the two regions.

CONCLUSIONS

The aim of this paper was to contribute to understanding of the ways in which cultural differences impact on the work of engineers in cross-cultural contexts. At the case study project it was found that cultural differences between the project engineer and community led to frustration and issues for management of the project. In particular, differing cultural perceptions led to difficulties with communication and participation, and problems arose when the management structure selected by the engineer proved inappropriate for the local cultural context.

The use of Hofstede's cultural dimensions as a framework for understanding issues that occurred during the project was helpful as it provided the means through which cultural problems could be examined from another perspective. This was found to increase tolerance and understanding of events previously experienced as frustrating.

This research has implications for other engineers working in cross-cultural contexts, especially where they work in a foreign culture which exhibits a larger power distance between authority and subordinates, a greater tendency towards collective rather than individual outlook or is more uncertainty adverse than their own culture.

REFERENCES

English, J (2002) The communication problems experienced by workforce on-site, and their possible solutions. "Journal of Construction Research", **3**(2), 311-321.

Enshassi, A and Burgess, R (1991) Managerial effectiveness and the style of management in the Middle East: an empirical analysis. "Construction Management and Economics", **9**(1), 79-92.

Geertz C (1973) "The Interpretation of Cultures". New York: Wiley.

Hall, MA and Jaggar, DM (1998) The importance of cultural differences to British construction professionals working internationally. In: Hughes, W (Ed.), "14th Annual ARCOM Conference", 9-11 September 1998, University of Reading. Association of Researchers in Construction Management,**1**, 60-60.

Hofstede, G (1980) "Cultures Consequences: International Differences in Work-related Values". London: Sage Publications.

Hofstede G (1981) Culture and organizations. "International Studies of Management and Organisation", **10**(4), 15-41.

Hofstede,G (1991) "Cultures and Organizations: Software of the Mind". New York: McGraw-Hill.

Hofstede, G, Hofstede, GJ and Minkov, M (2010) "Cultures and Organizations: Software of the Mind" 3rd ed. New York: McGraw-Hill.

Kroeber, A and Kluckhohn, C (1952) "Culture: A Critical Review of Concepts and Definitions". Cambridge, MA: Peabody Museum.

Low, PL and Shi, Y (2001) Cultural influences on organizational processes in international projects: two case studies. "Work Study", **50**(7), 276-285.

Ogbor, J (1990) "Organizational Change within a Cultural Context". Lund: Lund University Press.

Rabbat, O and Harris, RB (1982) Managing employee conflict in the Middle East. "Journal of the Construction Division", ASCE, **108**, 219-225.

Reed, B and Smout, I (2005) "Building with the community: Engineering projects to meet the needs of both men and women". WEDC: Loughborough

Schein, E (1985) "Organisational Culture and Leadership: A dynamic view". Jossey-Bass, San Francisco, CA.

UNESCO (2010) "Engineering: Issues, Challenges and Opportunities for Development". Paris: UNESCO Publishing.